1 for AP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: James P. Elia	)	Group Art Unit: 1647
Serial No.: 09/064,000	)	Examiner: Daniel C. Gamett
Filed: April 21, 1998	)	
For: METHOD FOR GROWTH OF SOFT TISSUE	)	

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail, in an envelope addressed to: MAIL STOP APPEAL BRIEF-PATENTS, Commissioner for Patents, P.O. Box 1450, Arlington, VA 22313-1450 on:

NOVEMBER 20, 2008

Signature — Date of signature 11/20/08

MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTN: Lashawn Hinton
Patent Appeal Center Specialist

APPELLANT'S RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

Dear Sir:

This paper responds to the November 6, 2008 Notification of Non-Compliant Appeal Brief under 37 C.F.R. 41.37(c) (1)(viii), in which the Appeal Brief filed October 14, 2008 was deemed to be defective because the "Brief does not present an argument under a separate heading for each ground of rejection on appeal;" "Heading II is a improper heading;" and "Section VII Argument is arguing a canceled claim (claim 406)."

As required, Appellant hereby submits the following revised sections:

1. RELATED APPEALS AND INTERFERENCES (page 2);

2. RELATED APPEALS AND AN INTERENCES APPENDIX (page 43); and

3. ARGUMENT (beginning at page 7).

Please substitute the above-identified sections for those sections filed with the Appeal Brief on October 14, 2008. Appellant believes that the submission of the enclosed substitute sections complies with the requirements of 37 C.F.R. 41.37(c)(1)(viii) and thus fully responds to the outstanding Notification of Non-Compliant Appeal Brief.

Respectfully submitted,

Dated: November 20, 2008

Gerald K. White
Reg. No. 26,611
Attorney for Appellant

GERALD K. WHITE & ASSOCIATES, P.C.
205 W. Randolph Street
Suite 835
Chicago, IL 60606
Phone: (312) 920-0588
Fax: (312) 920-0580
Email: gkwpatlaw@aol.com

RELATED APPEALS AND INTERFERENCES

There are no related appeals, interferences, or judicial proceedings known to Appellant, Appellants' legal representative, or Assignee, which may be related to, directly affect, be directly affected by, or may have a bearing on the Board's decision in the pending appeal, except for the following:

1. Appellant's Appeal Brief filed August 28, 2008, in co-pending application Serial No. 10/179,589;
2. Notice of Appeal mailed to the Patent and Trademark Office (hereinafter "PTO") on September 30, 2008, in co-pending application Serial No. 09/794,456; and
3. Appellant's Reply Brief filed on March 18, 2008, in co-pending application Serial No. 09/836,750. A Request for Continued Examination (hereinafter "RCE") was also filed on June 6, 2008, in co-pending application Serial No. 09/836,750 to ensure the entry and consideration of additional evidence. As of the present date, the PTO has not acted upon the RCE.

The attached Related Appeals and Interferences Appendix confirms such statement.

RELATED APPEALS AND INTERFERENCES APPENDIX

1. Application Serial No. 10/179,589 filed June 25, 2002, Appellant's Appeal Brief filed on August 28, 2008.

2. Application Serial No. 09/794,456 filed February 27, 2001, Notice of Appeal mailed on September 30, 2008.

3. Application Serial No. 09/836,750 filed April 27, 2001, Appellant's Reply Brief filed on March 18, 2008. Request for Continued Examination filed on June 6, 2008.

ARGUMENT

Rejection under 35 U.S.C. §112, Second Paragraph – Indefiniteness

Claims 403-405 and 407–412 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner considers these claims to be indefinite because it is unclear whether the step of "forming a bud" is an intrinsic step of artery formation or whether the practitioner must perform further action to form an artery. Applicant disagrees that claims 403-405 and 407-412 define subject matter that fail to meet the definiteness requirements of 35 U.S.C. §112, second paragraph. Appellant herein argues the patentability of each claim.

The Examiner questioned whether the formation of a bud would be an intrinsic step in artery formation or whether the practitioner would require further action. Examiner seems to be confusing the "definiteness" requirement of the second paragraph with the theory underlying Applicant's invention. The Examiner has not explained how an understanding of the underlying theory of the invention is required to render the claimed subject matter definite to one skilled in the medical art. Rather, it is clear from the specification that the only step required by the practitioner is that of injecting stem cells into a selected site in a patient's body. Once injected, the stem cells interact with the human host by differentiating along predetermined physiological developmental pathways to form a vascular bud which grows into an artery. One skilled in the medical art would clearly understand and appreciate that organs, such as arteries, would grow in the body of a human patient from a bud primordium without further action by the practitioner. One skilled in the medical art reading the claims in this light would clearly understand their scope. Accordingly, Appellant does not believe that it is necessary to

amend the claims as suggested by the Examiner at page 3 of the Final to overcome this rejection. However, should the Board believe that such amendment is required to overcome the rejection, Applicant stands ready to make the suggested amendment.

Rejection under 35 U.S.C. §112, First Paragraph - Description

Claim 404 stands rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner states that the specification, as originally filed, does not provide antecedent support for language calling for the "administration of cells to a damaged site in a leg of a patient." Applicant disagrees.

On page 12, ¶15 of the Final, the Examiner correctly frames the lack of description issue as bottomed on an inquiry as to whether the instant specification taken as a whole would reasonably lead one skilled in the art to practice the method defined by claim 404. What the Examiner apparently fails to appreciate, however, is that such an inquiry is a question of fact. In re Wertheim, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). Based on this record, it is patently clear that the Examiner's rejection lacks a sound factual basis.

Example 18 provides a written description of intramuscular administration of cDNA clones encoding VEGF into ischemic tissue (damaged artery) in the leg of a human patient to promote artery growth. The Examiner's prior statement that, "a damaged artery in a leg is not the same scope as damaged site in a leg" is inept at best. The real issue is not whether the language "damaged site" is specifically recited in Example 18 but whether the concept of administrating a soft tissue promoter to a

damaged site in the leg of a patient is conveyed by the original disclosure considered as a whole. See In re Anderson, 471 F. 2d 1237, 176 USPQ 331, (CCPA 1973) and In re Rasmussen, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981). The specification as filed is replete with disclosure relating to the concept of administering compositions to a "desired site" in the body for promoting the growth of soft tissue, such as an artery, as described in Example 18 and on page 53, lines 20-21 of the specification, which clearly teaches (page 53, lines 20-21) that, "the selection of sites can vary as desired."

Applicant further disagrees with the Examiner's statement that, "the specification does not envision administration of cells at the damaged artery." The written description requirement of the statute "serves to insure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him; how the specification accomplishes this is not material." In re Wertheim, supra. The court in In re Alton, 76 F.3d 1168, 37 USPQ 1578 (Fed. Cir. 1996) held that an applicant in satisfying the written description requirement:

> "...does not have to utilize any particular form of disclosure to describe the subject matter claimed, but 'the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed.' In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (citation omitted). Put another way, 'the applicant must . . . convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention.' Vas-Cath, 935 F.2d at 1563-64, 19 USPQ2d at 1117. Finally, we have stated that '[p]recisely how close the original description must come to comply with the description requirement of section 112 must be determined on a case-by-case basis.' Eiselstein v. Frank, 52 F.3d 1035, 1039, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995) (quoting Vas-Cath, 935 F.2d at 1561, 19 USPQ2d at 1116)."

It is trite law that the Examiner, when determining compliance with the description requirement of the statute, must consider the entire disclosure as it would be understood by one skilled in the art at the time the application was filed. , In re Anderson, supra. The Examiner's statement at page 10, ¶9 of the Final that:

> Therefore, for one of skill in the art to even think of extrapolating example18 to guide the use of cells, the skilled artisan would already have to know the very thing that Applicant claims to have been the first to discover...

evinces a classic failure on the part of the PTO to meet its initial burden of presenting evidence why persons skilled in the art would not perceive in Appellant's specification a reasonable description of the subject matter defined in the claim in issue. Indeed, the contemporary work described in the U.S. Patent No. 5, 980,887 to Isner et al. (of record and hereinafter referred to as "Isner '887") and in the Asahara et al. publication[1] (hereinafter referred to as "Asahara") is evidence that the skilled artisan was aware at the time of filing of Appellant's application that cell therapy using intramuscular injection of endothelial progenitor stem cells was known for treating ischemic tissue in a human patient as an alternative to intramuscular injection of DNA encoding VEGF. Isner '887 clearly discloses that cells and genes are alternatives in the Summary of the Invention at column 3, lines 1-18. The Examiner's statement at page 11, ¶12 of the Final that:

> Rather, Applicant relies on the notion that a teaching for cDNA for growing an artery intrinsically and inherently causes one skilled in the art to envision using cells for the same purpose

[1] Science, 275:964-967 (1997). The Science article is a publication of the work disclosed and claimed in Isner '887 and is cited in the Isner '887, a copy of which is attached hereto for the readers' convenience as Exhibit A.

clearly misstates Appellant's position. On what basis does the Examiner make such a clearly erroneous assertion? What Appellant argues is that one skilled in the art possessing an understanding of the contemporary prior art, such as evidenced by the Isner '887 patent, when reading the instant specification would understand that its context clearly describes that cDNA and stem cells when injected intramuscularly in a human patient are alternative compositions for providing ischemic tissue with increased blood vessels – that Appellant was clearly in possession of the claimed subject matter at the time of filing of the instant application.

The Examiner has failed to explain where the language of claim 404 calling for "injecting stem cells...at a damaged site" in a patient's leg defines subject matter completely outside the scope of Appellant's specification. The specification clearly contains a description of the claimed invention using descriptive words that fully set forth the claimed subject matter, albeit not *in haec verba.* See Eiselstein v. Frank, 52 F.3d 1035, 1038, 34 USPQ 2d 1467, 1470 (Fed. Cir.1995).

Applicant submits that all the limitations of claim 404 appear in the specification as originally filed. The specification, starting at page 20, line 10, defines growth factors as compositions that promote soft and hard tissue growth. The specification is replete with description of inserting a soft tissue growth promoter at a desired (damaged) site in the body (pages 10, 18, 20, 21, 31, 32, 45, 52, 53, 56, and 62). Appropriate compositions which promote the growth of soft tissue within the scope of Applicant's invention are described as comprising a patient's own cells (pages 47 and 48) and particularly stem cells (pages 37, 40, 41, 42, 48, 51 etc.) including autologous and allogeneic global bone marrow stem cells (bone marrow mononuclear cells/BMCs) and adult stem cells

collected from peripheral blood. One skilled in the art reading the subject application would understand that Applicant's invention is not limited to using a particular soft tissue promoter, such as the cDNA encoding VEGF specifically described in Example 18 but, rather, includes the use of a broad class of described soft tissue promoters, including cells, such as stem cells. Claim 404 is directed to an alternative embodiment (elected invention) to the soft tissue promoter delineated in Example 18. One skilled in the art reading the subject matter disclosed on page 47, lines 22 through page 48, line 15 of the instant specification would readily understand that, as of the filing date, Applicant was in possession of the concept of employing a patient's own stem cells to promote the growth of an artery within the scope of claim 404.

It is noted that the Examiner no longer asserts that Appellant's teaching of, "administration to arterial walls...as described in Example 18]...does not support the recitation of intramuscular injection" and for good reason. Reference to any common medical dictionary confirms that arteries have a muscle component.

The Examiner acknowledges that the instant specification teaches that cells are included in the class of soft tissue growth promoters. See, in particular, page 7, ¶14, of the July 24, 2007 Office communication where the Examiner states, "Therefore, *in the lexicon of this specification,* 'cells' may be a subgenus of 'growth factor'." Paragraph 4 of the Third and Fourth Supplemental Declarations of Drs. Heuser and Lorincz (of record) confirm that one skilled in the art to which the invention is directed would reach the same conclusion when reading the instant specification. The Examiner's reading and acknowledgement of the content of the specification is consistent with the mandate of

the *en banc* CAFC decision in Phillips v. AWH Corporation, 415 F.3d 1303 (Fed. Cir.2005).

Appellant believes that the Examiner's acknowledgement that cells are growth factors establishes a material fact in this record which is the law of the case. In related application Serial No. 09/794,456, Examiner Kemmerer reached the same conclusion at page 6, lines 1-8 in the February 22, 2006 PTO communication. A copy of such portion of the PTO communication is attached hereto as Exhibit B for the readers' convenience. Perforce, this established material fact requires the Examiner to consider all relevant portions of Appellant's disclosure in evaluating the Section 112 "description" issue herein, including disclosures related to the genus "growth factor." In view of this material fact, it was error for the Examiner to fail to consider the original disclosure as a whole, i.e., the above-mentioned genus and species relationship, when determining the specification's compliance or non-compliance with the description requirement of 35 U.S.C. §112, first paragraph. Thus, the Examiner's position disregards the tenants of relevant case law such as In re Anderson, supra; In re Rasmussen, supra; and Johnson and Farnham, 558 F.2d 1008, 194 USPQ 187, 195 (CCPA 1977).

The Examiner at page 10, ¶10 of the Final states that, "Each patent application is evaluated on its own merits." Of course this is true. The Examiner has proffered no objective evidence that stem cells and cDNA clones function differently in the context of Appellant's invention, and for good reason. Indeed, the record, as evidenced by Isner '887 and Asahara establishes as a material fact that they possess a common functionality - they belong to a class of compositions that promote growth of soft tissues (blood vessels) in a human patient. Further, Nabel U.S. Patent No. 5,328,470 (of record and

hereinafter "Nabel") provides further evidence that those skilled in the art at the time of filing of Appellant's application were aware of the alternative use of cells and DNA vector in the site-specific treatment of cardiovascular diseases, including the perfusion of ischemic tissue. Nabel clearly teaches that cells or appropriate vector (DNA) can be "surgically, percutaneously, or intravenously" introduced into the patient. The Examiner's statement on page 11, ¶13 of the Final that Appellant's citation "is inexplicable" is indeed puzzling. One skilled in the art reading Nabel would clearly understand that this patent teaches more than a kit comprising DNA. Nabel, Isner '887, and Asahara are evidence of the state of the art at the time of filing of the instant application.

The record (Law) of this case establishes that the PTO in requiring an election of species in the instant application and in co-pending and related application Serial Nos. 09/794,456 and 09/836,750 has held cells (stem cells) to be a species within the disclosed class of growth promoters (growth factors). The Examiner's reliance on case law relating to genus-species requirements misses the point. The present Examiner is bound by prior PTO holdings. It is error for the Examiner at this late stage of prosecution to contend otherwise.

Moreover, the PTO's species election requirement is consistent with the issuance of Isner '887 and Nabel, both of which treat cells and genes (DNA vector) as alternative agents for promoting the growth of blood vessels in ischemic tissue. This is contrary to the Examiner's erroneous assertion of lack of functionality. It is further pointed out that the scope of claims issued by the PTO for Isner '887 encompass "VEGF cDNA" and "cells" as alternative angiogenetic promoters, i.e., capillary blood vessel promoters, not

distinct inventions. Isner '887 differs from the present invention by disclosing and claiming injecting endothelial progenitor cells that are necessarily limited to promoting endothelial cell growth (capillary blood vessels), not artery growth as required in instant claim 404.

Further, the PTO's issuance of the U.S. Patent No. 7,097,832 to Kornowski et al. (of record and hereinafter "Kornowski"), in the same Class 424/93.7 as Isner '887, evidences that the Isner '887's use of endothelial progenitor cells promotes capillary blood vessel growth, not artery growth. This fact is also confirmed in a post-filing date article published by the American Heart Association entitled, "Endothelial Progenitor Cells: More Than an Inflammatory Response" (of record). What the Examiner has failed to appreciate is that, on this record, Dr. Elia was the first to recognize that cDNA encoding VEGF and stem cells are alternative soft tissue growth promoters for growing arteries by direct intramuscular injection into a human patient. This is a material fact established on this record regardless of Appellant's manner of "reduction of practice" for the present invention.

There can be no doubt that under current law the instant specification fairly satisfies the description requirement of the statute by containing a reasonably equivalent description of the subject matter called for by claim 404. The language of claim 404 added by the Amendment filed November 3, 2006 finds antecedent support in the disclosure of the application as filed and, perforce does not constitute new matter.

Rejection of Claims 403-405 and 407-412
under 35 U.S.C. §112, First Paragraph – Enablement

Claims 403-405 and 407-412 stand finally rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Appellant responds to the rejection of claims 403-405 and 407-412 in the following three sections, wherein patentability is argued separately in each section.

Rejection of Claims 403, 411, and 412
under 35 U.S.C. §112, First Paragraph – Enablement

Claims 403, 411, and 412 stand finally rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Appellant disagrees that the subject specification fails to enable the claimed subject matter under current law. Appellant herein argues the patentability of each claim.

It is well settled that enablement issues are determined by consideration of an applicant's specification along with knowledge in the art at the time of filing, United States v. Telectronics, 857 F. 2d 778, 785; 8 USPQ 2d 1217, 1223 (Fed. Cir.1988, *cert. denied* 490 U.S. 1946 (1989). Appellant submits that the instant specification, when considered in view of the knowledge in the art at the time the application was filed, enables one skilled in the medical art to make and use the claimed invention.

Appellant submits that are three major points to consider when determining whether the instant specification contains a disclosure that would have enabled a skilled person in the medical art to make and use the claimed invention within the purview of the statute. The points are: 1) the specification disclosure; 2) the knowledge in the art at the time the application was filed; and 3) the skill level in the art. When these points are

considered, there should be no doubt that Appellant's specification provides an enabling disclosure.

First, there is a considerable body of disclosure provided by the subject application relating to Appellant's disclosed invention of promoting the growth of soft or hard tissue in human patients—including growing a new artery as called for by the claims at issue — by administering a broad class of growth factors, including stem cells, suitable for affecting such tissue growth. In this regard, Appellant's specification (pages 10, 20, 21, 30-33, and 37-52) provides a substantial body of disclosure regarding using a growth factor to form a bud and thus grow soft tissue in a human body. These portions of the specification describe a class of claimed and unclaimed growth factors that broadly and specifically include genes, nucleic acids, a patient's own cells (autologous cells), or universal cells, e.g., stem cells (global mononuclear bone marrow cells), etc., all of which are described to promote tissue growth through differentiation and morphogenesis. Appellant's broad and specific disclosure relating to the aforementioned class of growth factors patently provides a scope of enablement which includes stem cells broadly (pages 37, 48, 50, and 51) and bone marrow mononuclear stem cells specifically (pages 40-42). Such disclosure is commensurate in scope with the subject matter of the claims at issue.

Second, the record clearly establishes that the administration techniques, apparatus, and administered compositions disclosed and claimed by Appellant were old and well known as of the filing date of the instant patent application.

Isner '887 and Asahara constitute contemporary prior art knowledge which employed a limited subpopulation of EC progenitor stem cells isolated from human peripheral blood for promoting capillary growth. Isner '887 and Asahara evidence that

those skilled in the art prior to the 1998 filing date of Appellant were aware that EC progenitor cells (stem cells) and DNA encoding VEGF are alternatives for treating blood vessel injuries, i.e., ischemic tissue. Isner '887 at column 7, lines 17-23 of the patent, discloses that "any suitable means" can be used to administer stem cells, including intramuscular injection. Nabel teaches one skilled in the art that cells and genes can be either locally (injection) or systemically administered to human patients to treat organs affected by disease, including ischemic tissue. Although these patents are directed to different inventions than that of Appellants, i.e., employ different cells and achieve different results, they nevertheless apprise one skilled in the art of prior art methods commonly used for administering genes and cells for the treatment of human diseases involving ischemic tissue. Such objective evidence must be taken into consideration by the PTO when determining enablement under 35 U.S.C. §112, first paragraph.

One skilled in the art reading the instant specification's teaching of using stem cells harvested from the bone marrow or blood of the patient would understand that the claimed invention distinguishes from Isner '887 by describing using unfractionated (global) bone marrow mononuclear cells. There is no basis in fact for determining that a fractionated population, such as EC progenitor cells, is disclosed by Appellant because there is no disclosure that the harvested cells are separated and then a separated portion administered to a patient. Reading the disclosure otherwise distorts the reasonable/intended reading of Appellant's specification. Isner '887 serves to apprise one skilled in the art of general methods for implanting endiothelial progenitor stem cells for forming capillary blood vessels. One skilled in the art being so apprised and reading the

instant specification would understand that Appellant has provided sufficient information, i.e., the process steps and ingredients essential to grow an artery as set forth in the claims.

Further evidence supporting enablement may be found in the form of the February 13, 2001 Declaration of Dr. G. Robert Meger (of record) which demonstrates that the disclosed and claimed administration techniques used in practicing the invention were known at the filing date of the application. The administration techniques disclosed by Appellant were routinely employed in the medical art, but not in the claimed combination with the claimed materials, at the time the instant application was filed. See in particular the discussion in Isner '887 and Asahara in regard to the medical art's prior use of bone marrow transplants (HSCs) in treating diseases. Isner '887 acknowledges using techniques similar to those used in the medical arts for recovering HSCs in obtaining endothelial progenitor cells (CD34+). The collection, handling, and reimplantation of HSCs are so well known and notorious in the medical arts that the Board should take Official Notice of same.

In any event, Appellant submits that such disclosure of the instant specification and existing knowledge in the art such as that identified by Dr. Meger, as well as the work of Isner '887, Asahara, and Nabel, would enable a skilled practitioner to practice the claimed invention. As will become evident later, two experts in the medical field, Drs. Richard Heuser and Andrew E. Lorincz, being apprised of relevant portions of Appellant's specification, confirm such conclusion.

Third, the PTO has acknowledged that the level of skill in the medical art is high. Appellant agrees that the skill level is high when it is considered that many years of

education, training, and experience are required in the medical field. The instant specification is addressed to and is understood by such highly skilled persons.

Once the above-identified relevant materials and administration techniques set forth in the subject specification are properly considered in their entirety, Appellant believes that there should be no question that one skilled in the medical art is enabled to make and use the claimed invention. This conclusion is reinforced, as noted above, by the fact that the materials and administration techniques, but not the inventive results, were well known when the instant application was filed. MPEP Section 2164 states that the purpose of the enablement requirement is to describe the claimed invention in such terms to permit one skilled in the art to make and use the invention. Such Section cautions that detailed procedures for making and using the invention may not be necessary if the description of the invention itself is sufficient to permit those skilled in the art to make and use the invention. For the reader's convenience, MPEP Section 2164.01 states that:

> A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F2d. 660, 661, 18 USPQ 2d 1331, 1332 (Fed. Cir. 1991); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F2d. 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986) cert denied, 480 U.S. 947 (1987); and *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Co.*, 730 F2d. 1452, 1463, 221 USPQ 481, 489 (Fed. Cir.1984).

Appellant believes that the above caution is especially relevant to the instant factual situation where the Examiner has conceded that there was a high level of skill in the art at the time the instant application was filed and, further in view of the evidence contained in Isner '887, Asahara, Nabel, and Dr. Meger's Declaration that the methods

and apparatus needed to practice the invention were well known at the time of the invention. Thus, Appellant submits that the instant disclosure clearly enables one skilled in the medical arts to make and/or use the full scope of the claimed invention without undue experimentation. A reasonable consideration of the three above-delineated points and the interaction thereof compels such conclusion.

Appellant's above conclusion that one skilled in the art is enabled to make and use the claimed invention is consistent with the Examiner's acknowledgement at page 14, ¶18 of the Final that the state of the art after Isner '887 disclosure was such that Appellant's claimed "...method was known to be possible." Accordingly, the enablement issue should be put to rest because the Isner '887 and Asahara disclosures are prior to or contemporary with the filing date of the instant application.

The Examiner has the burden to establish and support by convincing objective evidence a *prima facie* case of lack of enablement. For reasons set forth below, Appellant believes the Examiner has failed to meet such burden.

The first paragraph of the statue requires nothing more than objective enablement, and it is of no importance whether such teaching is set forth by use of illustrative examples or by broad terminology. As a general matter, an application's disclosure, which contains a teaching of how to make and use the invention in terms which correspond in scope to those used in describing the invention sought to be patented, is considered to be in compliance with the enabling requirement of the statue. In re Marzocchi, 439 F.2d 220, 169 USPQ 367, 369-370 (CCPA, 1971). Further, "Section 112 does not require that a specification convince persons skilled in the art that the assertions

therein are correct." [Emphasis added]. In re Robins, 429 F.2d 452, 166 USPQ 552 (CCPA, 1970).

Turning to the reasons proffered by the Examiner regarding non-enablement, Appellant presents the following remarks.

When evaluating enablement, it is incumbent upon the Examiner to determine what subject matter each claim recites, i.e., the scope of protection sought for each claim. The scope of dependent claims are properly determined with respect to 35 U.S.C. §112, fourth paragraph. See MPEP Section 2164.08. It is submitted that the Examiner has failed to perform such required analysis. Appellant notes that the Examiner has not addressed the subject matter of each claim separately. Appellant has argued that the subject matter of all claims finds enabling support in the specification.

Appellant further points out that it is evident the Examiner failed to consider the disclosure provided by the subject specification as a whole in determining compliance with the enablement requirement of the statute. The appropriate factual determination is whether the instant specification reasonably directs one skilled in the art how to make and use the claimed subject matter. As demonstrated above, the Examiner erroneously restricted the factual determination to the elected species of growth factor and, thusly, ignored those portions of the specification describing a broader generic invention and also ignored disclosure related to non-elected species. Appellant is entitled to have the entire disclosure considered in determining compliance with 35 U.S.C. §112, first paragraph. See In re Anderson, supra and In re Johnson and Farnham, supra and such determination must take into consideration that which is known in the prior art – that a

patent should preferably omit that which is well known/understood in the particular art to which the claims are directed.

The Examiner at pages 15-17, ¶20 of the Final asserts that the instant specification fails to provide any guidance as to how to use any kind of cell , much less a stem cell, to grow an artery. The disclosure at page 47, line 22 through page 48, line 15 of the specification clearly rebuts the Examiner's notion that Appellant never clearly enunciated using stem cells (bone marrow stem cells) for promoting direct differentiation and morphogenesis into an organ. Of course, one skilled in the art would recognize that growth of an organ encompasses an artery. Page 45 of the specification sets forth the well recognized medical fact that "[a]n artery is an organ from the circulatory system." Examiner's statement that the specification fails to "provide any guidance as to how to use stem cells to grow an artery evinces a lack of understanding of how differentiation and morphogenesis occurs *in vivo*. The fact that stem cells home to foci of ischemic tissue was known to those skilled in the art at the time of filing of the instant specification, as evidenced by Asahara. Hubris aside, the rhetorical theme employed by the Examiner at pages 15-17, ¶20 of the Final appears to lack proper decorum.

The Examiner at pages 17 and 18, ¶21of the Final erroneously concludes that Appellant implicitly acknowledges that *in vivo* treatments using nucleic acids and cells had a different status in the art. Appellant has neither explicitly or implicitly, made any such acknowledgement. Appellant has continuously pointed out that Nabel and Isner '887 dispel any such notion. Both show art recognition that cells and genes comprise alternate therapeutic agents for treating human diseases, including those involving ischemic tissue. The Examiner's statement that Appellant "does not show a single organ, part of an organ,

tissue, artery or even a bud by placing cells in a body" implies that enablement under the statute requires an actual reduction of practice. The Examiner has failed to cite and law or statutory/regulatory requirements that support such a contention. Appellant further notes that perhaps the Examiner is unaware that a tooth is a duplex organ comprising both hard and soft tissue.

The Examiner at page 19, ¶23 of the Final attempts to support the above position by citing authority that an actual reduction to practice is required in inventions involving "some unpredictable areas of chemistry and biology" - that conception requires an actual reduction to practice. Underlying this line of reasoning is a notion that prophetic inventions involving the medical arts cannot *ipso facto* as a matter of law satisfy the statutory enablement requirement. The Examiner cites no regulation, statutory or case law in support of this latter reasoning. In a broader sense, the Examiner fails to appreciate that enablement is determined on a case-by-case basis which necessarily takes into consideration the state of the prior art as well as knowledge and skill possessed by workers in the art at the time of the invention. The prior art workers at the time of the present invention , as evidenced by the Asahara, understood how to locally implant (i.e., muscularly inject) endothelial progenitor stem cells (CD34+ subpopulation) into a body to locally treat ischemic tissue by growing capillary blood vessels. Appellant's contribution to the art resides in the discovery that unfractionated bone marrow stem cells, through differentiation and morphogenesis, form an organ, i.e., an artery, when locally implanted in a body. There can be no doubt that the record here when considered in its entirety compels a conclusion that Appellant's specification provides sufficient guidance for one skilled in the art to make and use the claimed invention.

The Examiner at pages 20-25, ¶¶ 24–29 of the Final attempts to explain that, while the specification may teach the concept of using bone marrow stem cells to promote the growth of an artery, there is no disclosure therein specifically defining the population or specific type of cells which would or would not grow an artery. Firstly, there is no requirement for an applicant to specify embodiments that will not work. All that is required is to specify embodiments that work. Secondly, the specification specifies using adult (autologous implantation) stem cells harvested from the bone marrow or peripheral blood of the patient. Nowhere does the specification describe using any subfraction of stem cells or even teach isolation and recovery of any subpopulation of stem cells. One skilled in the art reading the subject specification would clearly understand that Appellant was in possession of the concept of implanting whole (unfractionated) bone marrow mononuclear cells to promote growth of organs, such as arteries, in a human patient. The Examiner correctly attributes to the Isner '887 discovery that CD34+ mononuclear cell population, present in both bone marrow and peripheral blood comprises progenitors for endothelial cells (ECs). What the Examiner fails to appreciate is that Isner '887 discloses that isolated CD34+ mononuclear cells are limited to integrating into capillary walls (column 14, lines 45-48) whereas CD34- mononuclear cells were typically found in stroma near capillaries (column 14, lines 54-57). Kornowski, in Example 3, confirms that Isner '887 forms only capillaries. Appellant's invention is directed to using unfractionated bone marrow mononuclear cells which includes CD34+, CD34-, AC133+, CD45/CD14 negative cells as well as cytokines. The claims on appeal call for a different therapeutic agent and produce a different (novel) result from the process of Isner '887.

The Examiner's charge at pages 21 and 22, ¶25 of the Final that Appellant is practicing obfuscation by taking language from different portions of the text in order to support the claimed language is disturbing indeed. Perhaps, the genesis of the Examiner's problem is the challenge of reading the specification as a whole in view of the state of the art at the time of filing. The Examiner's quote from pages 47 and 48 of the specification artfully omits the following two paragraphs:

> During reimplantation one of the patient's own cells is returned to the patient. During implantation, a cell not originally obtained from the patient is inserted on or in the patient.
>
> In the example above, if germinal cells (and in some cases, stem cells) are utilized a direct differentiation and morphogenesis into an organ can occur in vivo, ex vivo, or in vitro.

When read in its proper context by one skilled in the medical art, the language on page 48, line 13 of the specification "[i]n the example above..." refers to the formation (page 47, line 22) of "[o]rgans and/or tissues...formed utilizing the patient's own cells." Only an unskilled person in the medical art would be confused by the disclosures on pages 47 and 48. It appears that the Examiner, by reading the specification out of context, is employing the obfuscatory tactics that Appellant is falsely charged with.

The Examiner's statement at pages 24 and 25, ¶29 of the Final that the specification fails to proffer any solutions to the problems encountered in regenerative medicine misses the point. The role of stem cells in the critical physiological process of angiogenesis was well known prior to both Isner '887 and the claimed inventions and is critical in human reproduction, development and wound repair. The specification discloses that pluripotent stem cells are required for growing multiple body parts

requiring multiple tissues. As noted earlier, the Board should take Official Notice that bone marrow transplantation therapy is notoriously old. Those skilled in the art are aware that bone marrow comprises pluripotent stem cells. It is clear from Isner '887 that stem cells home to foci of injury. Accordingly, one skilled in the art reading the subject specification would understand that all that is required to use pluripotent stem cells to grow an artery is to implant them at the desired site.

The Examiner's statement at page 25, ¶30 of the Final lacks merit, but none-the-less is disconcerting. Appellant has continuously argued and cited legal authority supporting the proposition that the entire specification disclosure must be considered by the PTO when determining whether the scope of the *claimed subject matter on appeal* reasonably finds descriptive and enabling support therein. However, such argument does not open the door to the Examiner's gratuitous and sometimes derogatory expressions of opinion concerning unclaimed inventions. Perhaps, the Examiner needs to be reminded that the PTO examination process is not an adversarial proceeding.

At page 25-30, ¶¶31-36 of the Final, the Examiner addresses the conversion of gene dosages to cell dosages proffered by Appellant. Appellant disagrees with the Examiner's position. Initially, Appellant submits it is clear from MPEP Section 2164.01 (c) that it is not necessary to specify the dosage if one skilled in the art could determine such information without undue experimentation. The Examiner apparently acknowledged, at page 25, ¶31, that there is no issue regarding the absence of guidance as to how many stem cells should be used to grow an artery. While Appellant agrees that dosage is not an enablement issue, nonetheless Appellant offers the following comments in regard to the calculus employed in the conversion.

Appellant used a well established weight basis conversion method employed in the medical art for decades to convert the gene dosage of Example 18 to cells. Appellant's extrapolation was designed to demonstrate that one skilled in the medical art could easily and routinely convert the gene dosage described in Example 18 to cell dosage. The conversion is valid because one skilled in the art would reasonably understand from reading the subject specification that Appellant was in possession of the concept that genes and cells are alternative compositions for growing soft tissues in a body. The conversion results illustrate that one skilled in the art could readily understand and apply the dosages of Example 18 to obtain equivalent cell dosage. Validation of the use of such weight conversion appears to be supported by the fact that such converted dosages are commensurate with those used by workers in the art using bone marrow stem cells to grow an artery, such as that reported in the 2002 Strauer publication (of record and hereinafter "Strauer 2002").

The Examiner alleged, at page 29 of the Final that the above correspondence of dosages with Strauer 2002 was "pure coincidence" and that Appellant "stumbled upon" a simple method for determining cell numbers. It is clear from such unfounded characterization that the Examiner has paid no deference to the conversion practice used routinely for decades by the medical art. Regarding the alleged "pure coincidence", attention is directed to the gene and cell dosages of Isner '887 at column 11, lines 4-9 and column 7, lines 17-23, respectively. A conversion of the dosages of nucleic acids of Isner '887 to corresponding dosages of cells was conducted.[2]

[2] Isner '887 specified a common dosage of 2000 micrograms for the more preferably and most preferably dosage ranges. Such common dosage was utilized in the conversion calculations. The weight of nucleic acids of an average cell was considered to equal 40 picograms (pg). The 2000 microgram dosage was converted to pg by multiplying by 10^6 equals 2000 x 10^6 pg. An average weight of 40 pg was used for

It is evident from the conversion of nucleic acid dosages to cell dosages that the converted cell dosages fall within the range specified by Isner '887. The reasonableness of the conversion has been previously demonstrated regarding a conversion of the dosage of Example 18 in the instant application to the bone marrow stem cell dosages specified by Strauer 2002. Hence, the usefulness of the well-known and established weight conversion has been demonstrated in two instances. Appellant believes this fact constitutes compelling evidence that the Examiner's criticism of the conversion is unwarranted. The Third Supplemental Declaration of Dr. Richard Heuser (of record and originally filed in co-pending application Serial No. 10/179,589) and the Second Supplemental Declaration of Dr. Andrew E. Lorincz (of record and originally filed in co-pending application Serial No. 10/179,589) confirm that the use of such well known tool is reasonable in the medical art. Accordingly, Appellant believes that the Examiner's above comments are based upon unsupported speculation and opinion rather than upon evidence.

The Examiner's statement at pages 27 and 28 of the Final that a person of skill in the art "...would never attempt such an extrapolation" is based on the incorrect determination that implanting genes is a technically different process from implanting cells. Such incorrect determination formed the basis for the equally incorrect conclusion that gene therapy and cell therapy have different status in the art and, therefore, cannot be considered as functional equivalents of one another. One need look no further than Isner '887 and Asahara to dispel such erroneous opinion.

---

nucleic acids as consistent with the prior conversion. The conversion was then made by dividing 2000×10^6 by 40 to arrive at a cell dosage of 50×10^6 and falls with in the range specified by Isner '887.

The Examiner's statement that "[n]o such extrapolation is taught in the specification," is inept since such extrapolations have been used for decades in the medical arts in regard to cell therapy. That which is well known in the art need not be included in Appellant's specification in order to comply with the enablement requirement of Section 112, first paragraph. See MPEP Section 2164.01.

Appellant believes that the dosage extrapolation and the opinions in regard thereto expressed in the Declarations of Drs. Heuser and Lorincz speak for themselves and confirm the reasonableness of Appellant's conversions. It is of particular note that the extrapolated dosages compare favorably (overlap) with the dosages of global bone marrow cells used by Strauer 2002 for treating myocardial infarction in human patients and in Isner '887 for a different type of soft tissue growth, thereby confirming the reasonableness of the respective Declarants' opinions.

The Examiner, at page 29 of the Final appears to mistakenly believe that the calculus is "Applicant's formula." The Examiner's challenge in regard to the technical basis underlying the conversions is misdirected. Such challenge should be directed toward the originators of this well known medical tool and workers in the art who used such alleged faulty calculus—not with Appellant's experts who simply confirmed that the calculus was reasonable and found its roots in the medical art because it is notoriously well known that dosages are commonly specified on a weight basis.

The Examiner's *ad hominem* criticism of Appellant's conversion fails to adequately give weight to its evidentiary value. Appellant's evidence establishes as a material fact that physicians have long used conversion charts/formulas for estimating dosages of cells from nucleic acids. It is clear from the record that cell survival and

differentiation are not paramount considerations in determining cell dosages because the general practice is to employ multiple doses since stem cell overdosing has not proved to be problematic. Those skilled in the art are aware that safe dose ranges have been established over years of medical practice directed to bone marrow transplant cell therapy. The Board's attention is again directed to the expert opinions of Drs. Heuser and Lorincz which validate the reasonableness of Appellant's dosage conversions.

At pages 30-33, ¶¶ 37-39 of the Final, the Examiner appears to raise the issue that actual working examples are required to establish enablement. The *armamentaria* underlying the Examiner's rejection is a requirement for actual clinical testing in order for inventions in the medical field to satisfy the enablement requirement of the statute. The Examiner has cited no authority establishing that prophetic inventions in the medical arts are prohibited by regulation, statute or by the courts. Indeed, it is well established that working examples are not required if the invention is disclosed in a manner that one skilled in the art would be able to practice it. Section 2164.02 of the MPEP states that:

> Compliance with the enablement requirement of 35 U.S.C. 112, first paragraph, does not turn on whether an example is disclosed. An example may be "working" or "prophetic." A working example is based on work actually performed. A prophetic example describes an embodiment of the invention based on predicted results rather than work actually conducted or results actually achieved.

One skilled in the art reading the specification at page 46, lines 3-8 would reasonably understand that Appellant disclosed a method comprising seeding, e.g., injecting, appropriate cells (stem cells) or other growth factors to promote growth of blood vessels (arteries) in a damaged portion of a human heart. Furthermore, one reasonably skilled in the art would understand from page 47, line 22 through page 48,

line 15 that a patient's own (autologous) stem cells can be used to grow function specific tissue, such as an artery, *in vivo* through differentiation and morphogenesis. Those skilled in the art understand that "morphogenesis" is the formation and differentiation of tissues and organs and that an artery is an organ. See pages 33 and 48 of the specification.

The Examiner's statement regarding "writing it down," absent evidence or sound reasoning, is insufficient to overcome the objective enablement provided by the specification. cf In re Marzocchi, 58 CCPA 1069, 439 F.2d 220, 169 USPQ 367, 369-370 (1971). Apparently, the Examiner fails to appreciate that the act of "writing down" a "prophetic" example which describes an embodiment based upon predicted results rather than work actually conducted is sufficient to satisfy a constructive reduction to practice.

The Examiner's statement', at page 30, ¶37 of the Final, that "the instant specification adds no new technical advance beyond that which is taught by Isner et al (Circulation. 1995;912687-2692)," evinces an apparent lack of understanding of the medical arts. The Isner et al. Circulation publication is related solely to gene therapy. Isner '887 confirms Appellant's argument that implanted endothelial progenitor cells (ECs) only attach to capillary walls and are incapable of promoting the growth of an artery as required in the claimed subject matter on appeal. To ignore this is to ignore the best evidence in the record that Appellant's invention is distinct and novel from both the Isner et al. Circulation publication and Isner '887. Appellant has not trivialized the differences between the respective works of Isner and the claimed method. Rather, Appellant has diligently pointed out the differences that exists there between. The

exuding of triviality resides solely with the Examiner because the question of whether Appellant has made a new technical advance that is unrelated to the enablement issue on appeal.

Furthermore, it is clear that the Isner et al. Circulation publication did not appreciate that stem cells promote the growth of arteries. It is further clear that Isner '887 failed to appreciate that global bone marrow stem cells promote the growth of arteries. The only support for the Examiner's statement that, "the instant specification does not even begin to work out the procedural differences between the protocol taught by Isner et al Circulation publication, and any method that uses cells instead of cDNA" is the written statement itself. The truth is that no difference in procedural protocol exists for administering stem cells using a hypodermic needle *vis-a-vis* genes, and this is readily apparent from reading the instant specification at page 21. This fact is confirmed by Isner '887 which teaches muscular injection of genes and cells. The Examiner has failed to identify what protocol is missing from Appellant's specification that would prevent one skilled in the art from practicing the claimed subject matter.

The Examiner, at pages 30 and 31 of the Final, stated that the PTO is forbidden to comment upon the validity of Isner '887, but then curiously proceeded to apparently defend the validity of this patent. Lest there be any misunderstanding, Appellant has never stated that Isner '887 is invalid.

The "obviousness" issue raised at page 33 of the Final has relevance only in the Examiner's mind because Appellant never, intentionally or unintentionally, linked an absence of an art rejection with proof of enablement. In any event, the Examiner has

stated, at page 34, that an obviousness rejection would not be proper and thus no issue exists between Appellant and Examiner on this point.

As a final point, the Examiner, at pages 13 and 25 of the Final, refers to the breadth of claims, the amount of direction or guidance, and the presence or absence of working examples as evidence of that undue experimentation would be required to practice the claimed invention, citing In re Wands 858 F.2d 731, 737, 8 USPQ 2d 1400, 1404 (Fed. Cir.1988). In Wands, the Court focused on three factors: the state of the prior art, the level of skill in the art, and the amount of direction provided by the specification. The specification (pages 47-48) clearly describes the concept of implanting a patient's own cells (autologous stem cells) to promote differentiation and morphogenesis into an organ, which by disclosure includes an artery. The specification teaches numerous methods of implantation including intramuscular injection. The Examiner's allegation that the specification fails to address complex problems "that might be encountered" in stem cell therapy is a "red herring," which has not been factually supported on the record. Contemporary prior art wisdom (Isner'887, Asahara) at the time of Appellant's invention demonstrates the conventionality of intramuscular injection of stem cells and genes in treating disease involving ischemic tissue. Contrary to the Examiner's assertion, the post filing work of Strauer 2002 does not describe solving any complex problems associated with implanting bone marrow stem cells. Neither the contemporary nor post filing art disclose any specific problems that had to be addressed and overcome in order to successfully implant cells in a human patient. Thus, the Examiner's determination that the specification is non enabling because it fails to address nonexistent problems is inauthentic.

Appellant believes the instant fact situation is similar to that of Wands because the skill level is high and known administration techniques and known materials are utilized in the practice of the invention. In addition to such factual parallelism, Appellant provided expert objective evidence in Paragraph 7 of the Fourth Supplemental Declarations of Drs. Heuser and Lorincz. These medical experts read portions of the specification setting forth the generic growth factor invention and claimed and non-claimed species of such generic invention and determined that one skilled in the medical arts, armed with the guidance and direction in the relevant specification disclosures, would be enabled to practice the methods defined in the claims on appeal and to predictably anticipate the results defined therein without need for resorting to undue experimentation. When the guidance and direction provided by Appellant's specification disclosure, the level of knowledge and the content of the prior at the time of the invention, such as that of Isner '887, Asahara and Nabel, as established in the record and Appellant's declaration evidence are interpreted in a reasonable manner, an analysis considering the Wands factors compels a conclusion that undue experimentation would not be required to practice the invention called for in the appealed claims.

In summary, Appellant believes that the Examiner failed to provide sufficient objective evidence or reasoning to support a determination of lack of enablement under current law when considered *vis-à-vis* the evidence of enablement provided by Appellant's specification. Thus, the Examiner has failed to establish a *prima facie* case of lack of enablement, and this rejection should be withdrawn.

Assuming *arguendo*, that the Examiner somehow met the burden of establishing a *prima facie* case of lack of enablement, Appellant believes that any such case has been

fully rebutted by the submission of the multiple Declarations of experts in the medical field—Drs. Meger, Lorincz, and Heuser (The Declaration of Dr. Meger; the Declarations, Supplemental Declarations, Second Supplemental Declarations, Third Supplemental Declarations, Fourth Supplemental Declarations, and the Declarations referred to above that were originally filed in co-pending application Serial No. 10/179,589, of Drs. Heuser and Lorincz, all of record). The conclusions set forth in these multiple Declarations establish material facts relating to a determination of description and enablement regarding the subject matter of the claims on appeal. These highly skilled medical experts read and relied solely upon identified, relevant portions of the specification, including generic, elected, and non-elected species portions, and reached independent determinations that one skilled in the medical art, armed with the knowledge presented in Appellant's disclosures, would be enabled to practice the claimed method and to predictably anticipate the results defined therein without need for resorting to undue experimentation.

The Examiner's failure at page 43, ¶41 to consider the merits of the above-mentioned multiple Declarations, and thus erroneously according "no weight" to such evidence, constitutes reversible error. The Examiner's failure to critically analyze and accord weight to Appellant's declaration evidence constitutes error as a matter of law. In re Alton, supra. It is trite law that the Examiner must consider the probative value of such evidence *vis-à-vis* any asserted *prima facie* case. See In re Oetiker, at 1445, 24 USPQ 2d at 1444. In re Keller, 642 F.2d 413, 208 USPQ 871, (CCPA 1981). The Examiner, not being a skilled person in the medical art, must give weight to these expert

opinions rather than rely solely upon his own opinion. See In re Neave, 370 F.2d 961, 152 USPQ 274, (CCPA 1967).

Rejection of Claims 404 and 405
under 35 U.S.C. §112, First Paragraph – Enablement

Appellant hereby repeats and relies upon the above presented remarks regarding the rejection of claims 403, 411, and 412 and submits the following remarks in support of the enablement of claims 404 and 405.

Claims 404 and 405 depend from claim 403 and call for intramuscularly injecting stem cells into a patent's leg (claim 404) or heart (claim 405). The specification, page 21, broadly describes administering soft tissue promoting compositions using a hypodermic needle. The specification, at page 45, discloses intramuscularly injecting such compositions into the leg or heart to promote the growth of an artery. Examples 18 and 19 describe specific protocols for intramuscular injection into the leg (Example 18) and the heart (Example 19). Pages 47 and 48 of the specification describe reimplanting a patient's own cells, i.e., stem cells to promote direct differentiation and morphogenesis into an organ, such as an artery.

Those workers versed in the medical art are well aware of the techniques employed for isolating mononuclear stem cells from bone marrow and peripheral blood. The practice of intramuscular injection of therapeutic agents is so common and well known in the medical art that the PTO should take Official Notice of this fact in evaluating the of scope of enablement provided by the specification.

Rejection of Claims 407-410
under 35 U.S.C. §112, First Paragraph – Enablement

Appellant hereby repeats and relies upon the above presented remarks regarding the rejection of claims 403, 411, and 412 and submits the following remarks in support of the enablement of claims 407-410.

Claims 407-410 depend directly or indirectly from claim 403 and call for stem cells harvested from bone marrow or blood. The specification, at page 45, discloses intramuscularly injecting such compositions into the leg or heart to promote the growth of an artery. As noted earlier, the specification describes using adult (autologous) stem cells harvested from the bone marrow or peripherial blood of the patient. Please see pages 40-42, 47, and 48 of the specification in this regard. Pages 47 and 48 of the specification describe reimplanting a patient's own cells, i.e., stem cells to promote direct differentiation and morphogenesis into an organ, such as an artery.

Stem cells and the practice of handling, storing, culturing and implantation of stem cells, including those of the patient, harvested bone marrow and blood are so common and well known in the medical art that the PTO should take Official Notice of these facts in evaluating the scope of enablement provided by the specification.

For the above reasons, Appellant submits that the rejection for lack of enablement under 35 U.S.C. §112, second paragraph, of claims 403-405 and 407-412 is contrary to current law, and perforce, should be withdrawn.

Provisional Rejection Nonstatutory – Obviousness-Type Double Patenting

Claims 403-405 were provisionally finally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 163, and 170-173 of co-pending application Serial No. 10/179,589. Appellant again notes such rejection and stands ready to submit an appropriate Terminal Disclaimer upon an indication of allowable subject matter related to such claims.

Rejection under 35 U.S.C. §101 – Double Patenting

Claims 403 and 407-412 were provisionally finally rejected under 35 U.S.C. §101 as claiming the same invention as that of claims 161-164 and 172-174 of co-pending Application Serial No. 10/179,589. Appellant notes that claim 403 was also rejected upon obvious-type double patenting grounds and thus the respective rejections appear on their face to be inconsistent.

It is pointed out that the claims in the instant application require the preliminary step of forming a bud in the body of the patient which then grows into an artery, while the claims co-pending application Serial No. 10/179,589 have no such requirement. Hence the claims presented in the respective applications are not drawn to identical subject matter. Hence, claims 403 and 407-412 are not identical with claims 161-164 and 172-174,

It is apparent from the above paragraphs that the respective claims are not drawn to the same invention and that the Examiner committed error. Accordingly, it is submitted by Appellant that the provisional final rejection under 35 U.S.C. §101 should be reversed by the Board.